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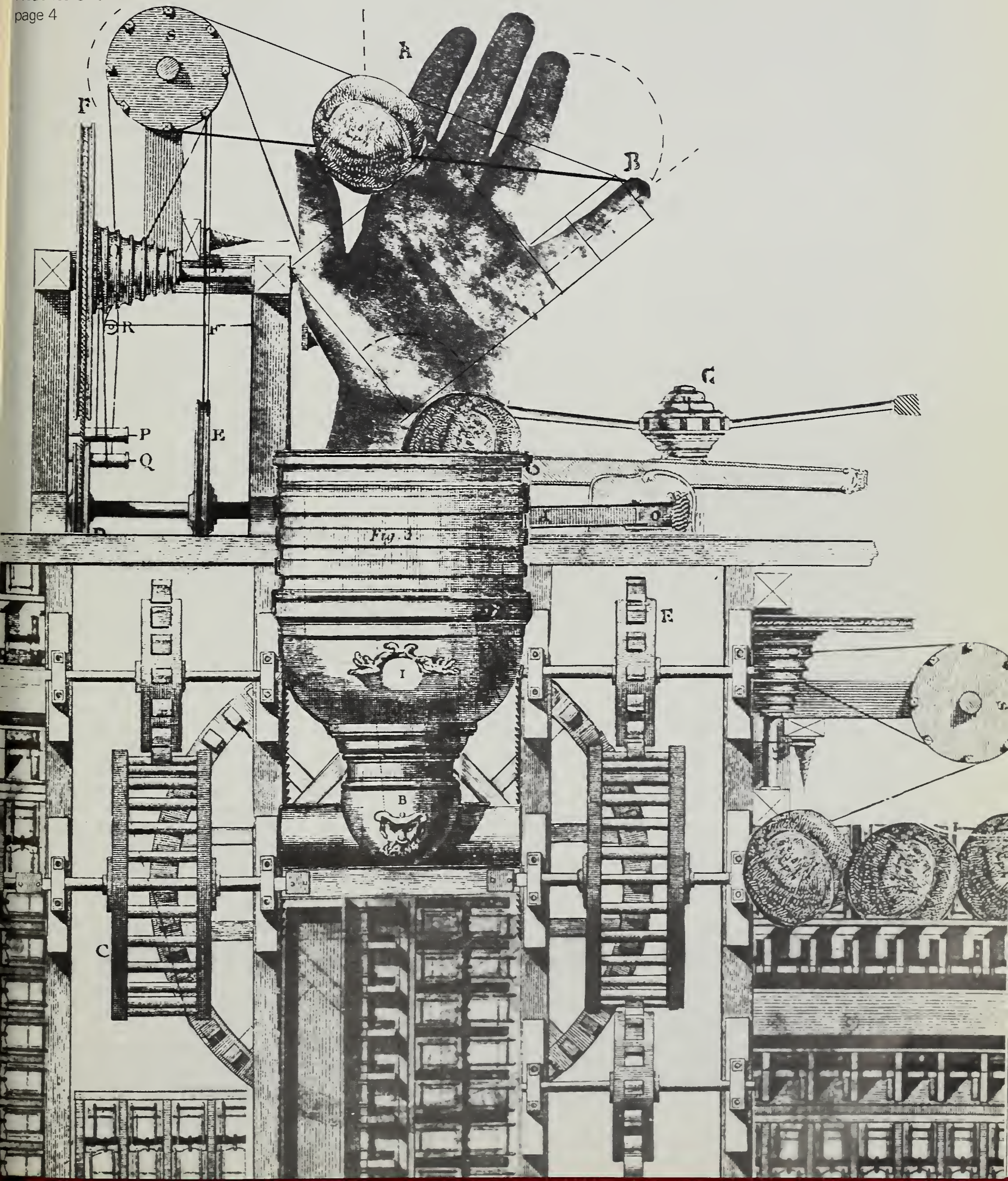
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THE FARM INDEX

U.S. Department of Agriculture/December 1971

Farm Machinery
Reaches Out
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Livestock producers can expect lower feed costs in '72 and the animal/feed price ratios will turn increasingly favorable for stepping up output of red meats. In November, the steer/corn ratio was around 28 (Omaha basis)—highest since records have been kept. In the next several months it'll probably climb even more.

In the short term, producers will be tempted to feed finished animals to heavier weights. "This could act to increase meat supplies in 1972," according to ERS's November *Livestock and Meat Situation*.

"In the longer term, the more favorable animal/feed price relationship will encourage increased output, but this will not boost slaughter supplies substantially until after 1972."

Gains in red meat are also promised by continuing growth of the Nation's cattle herd. In each of the past 2 years, the inventory of cattle and calves swelled about 2¼ million.

ERS livestock economists are speculating that 1972's beginning inventory will be up at least 3 million from the record 114.6 reported on January 1, 1971. The projection is based on the 2.5-percent increase in the 1971 calf crop, imports of live cattle, and estimates of animals lost through slaughter and other deaths.

The official report of cattle and calves on hand January 1, 1972 will be out in early February. If it shows an inventory of 117-million plus, this would mean a herd expansion of nearly a fifth since 1960. A herd of this size would enable larger placements of heifers on feed in '72 and still allow for continued growth in the inventory.

Fed cattle marketings in the first half of '72 will likely run moderately above year-earlier shipments, especially in the spring months. Key indicators: the bigger 1971 beef calf crop, up about 4 percent; an abundance of young animals available for feeding; and a generally strong cattle market.

Fed cattle prices this winter are expected to average near fall levels but above those of a year earlier. Some weakness may develop in the spring as larger supplies of fed cattle move to

market. The prospect that cattlemen will feed to somewhat heavier weights in '72 also presages a greater beef supply and downward pressure on prices.

Despite larger feeder cattle supplies, feeder cattle prices are projected to continue generally strong in the months ahead because of brisk demand. Prices typically rise in the winter and peak in late spring. However, prices this fall did not dip as usual, so spring prices in '72 may show little if any increase.

The winter hog slaughter will total well under a year earlier, and the spring kill, substantially under April-June 1971 rates. Corn Belt producers cut farrowings 10 percent in June-August and reported plans for an 11-percent cut in September-November. Most of the pigs born in June-November go to market in the first half of the following year. However, slaughter may not be down as much as Corn Belt intentions alone would indicate. Unknown are farrowing intentions of growers outside the Corn Belt. Too, it's possible the number of pigs saved per litter is higher than usual late this year.

The hog/corn ratio will favor hog production in '72, since hog prices will move up while corn prices stay low. For most of the first half of the year, the ratio is likely to remain around 20. This probably will spark production increases—perhaps in the second half of 1972.

Sheep and lamb slaughter will probably drop next year in response to reduced supplies of fed lambs in the winter and spring and a smaller 1972 lamb crop. Farmers next year will be holding fewer breeding ewes and the 1972 lamb crop overall could be off by as much as 5 percent, indicating smaller supplies for the slaughter market in the second half of 1972.

Lamb prices are expected to remain steady to strong this winter in contrast to a sharp break in late 1970 and early 1971. Spring lamb prices will probably advance seasonally. The lamb market will feel pressures from large marketings of cattle. So despite reduced slaughter supplies of lambs in '72, prices may run near 1971 levels.

Liquidation of sheep and lambs continued in 1971 for the 12th year in a row. This year's decline may be sharper than 1970's 700,000, when by year's end the inventory dropped to 19.6 million—lowest ever recorded.

The drawdown in sheep numbers has averaged 4 percent a year since 1960. Through most of the sixties, lamb prices were relatively low even though consumer demand was strong. Annual killing rates fell. However, the slaughter was large alongside the number of lambs that were being produced in this period.

Wheat supplies in 1971/72 have been placed at 2,360 million bushels—up 4 percent from last year and the biggest since 1962/63.

Total disappearance, based on mid-November estimates, will drop to around 1,385 million bushels, or 243 million fewer than the 1971 crop of 1,628 million.

Wheat feeding will hold at a high level but probably won't match last season's 216 million bushels. Wheat, which early in the season was cheaper than corn, has since lost its competitive advantage.

U.S. wheat exports, totaling 739 million bushels in 1970/71, may be down 15-20 percent for reasons of a larger 1971 world wheat crop and export losses from the dock strikes.

Domestic food use is projected unchanged from the past 4 years—around 520 million bushels—inasmuch as population growth is about offsetting declines in per capita wheat use.

Wheat for seed is estimated at 65 million bushels, up 8 percent from last season, with all of the increase expected in the winter wheat area.

Total wheat carryover next July 1 could reach 975 million bushels—the largest since 1963.

Farm milk prices for 1971 are seen averaging about \$5.87 per cwt., or around 3 percent more than in 1970. Price gains so far this year have been limited by supplies in excess of market demand.

Larger marketings combined with price gains could push total farm cash receipts from dairying to \$6.8 billion,

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up \$300 million from 1970. But total net income may not be up this year, as production costs rose substantially earlier in '71.

In '72, farmers' milk prices will hover near '71 levels assuming no change in price supports and Federal milk marketing order pricing. Cash receipts, however, could climb to nearly \$7 billion if milk marketings increase as expected.

This year's milk output may go up 1 percent from 1970's 117.4 billion pounds, and by a like percentage in 1972. Behind the projected increase—a slowdown in the decline in cow numbers; a steady 2-percent gain in milk output per cow; the largest supply of herd replacements since 1960 (31.7 per 100 milk cows); an eased labor situation compared with recent years; reduced feed costs; and record-high prices to producers.

The mid-November reading of the farmers' financial prospectus for 1971: Cash receipts from livestock, up slightly from 1970's \$29.6 billion . . . crop receipts materially larger, up nearly \$2 billion from \$19.6 billion . . . gross farm income, a gain of about \$2 billion from \$56.6 billion . . . total farm expenditures up about \$2 billion from last year's \$40.9 billion . . . bringing net farm income close to 1970's \$15.7 billion.

Food expenditures are running \$121 billion at the seasonally adjusted annual rate—5½ percent above a year earlier. In 1972, a moderate advance in food spending is indicated by the prospect of bigger after-tax incomes, the large Food Stamp Program, and some improvement in employment.

However, the percent of disposable income spent for food will likely fall again next year. Food's share was 16.1 percent in the third quarter of 1971, down a fraction from the first half.

FARM

RURAL

MARKETING

CONSUMER

FOREIGN

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FARM MACHINERY REACHES OUT

As much as farm machinery has advanced, there're still some fields to be reached. New machinery concentrates on the specialty crops and on the harvesting of tobacco.

An experimental lettuce harvester "feels" the head and if it's mature, triggers a cutting blade. It could cut labor use by one-half.

A hay cuber chops and presses hay into animal bite-size pieces, resulting in more economical transport, less waste, and reduced storage requirements (1/3 to 1/2 as much space as bales). It makes possible the total mechanization of hay handling.

A second generation harvester for processing tomatoes has an electronic sorter that eliminates 15 to 20 hand sorters now needed on commercial harvesters.

There are harvesting machines that reach up to 50-foot palm trees to harvest dates . . . and ones that go deep into the soil for such crops as potatoes and carrots.

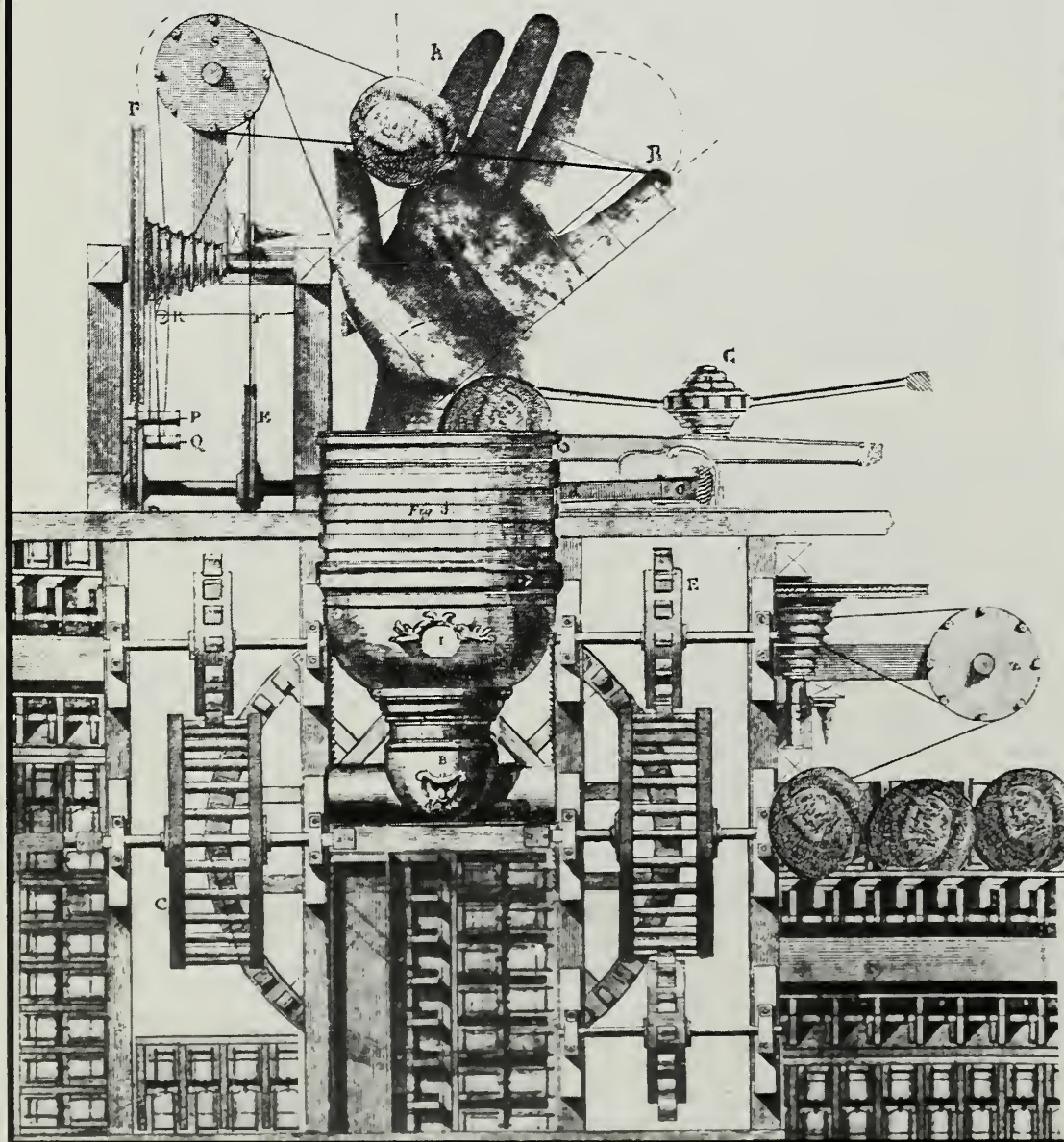
These are just a few of the "1972 models" that are appearing on farms around the country.

On the whole, machinery in the works focuses on specialized fruit and vegetable crops—and on tobacco, the last major holdout for mechanized harvesting.

The need for farm machinery for these crops is accentuated by the decrease in available stoop labor, by rising farm labor costs, and by competition from foreign countries.

Take the tobacco harvester. It's probably the most talked-about new piece of machinery around. Economists foresee that if there is another big wage increase for workers, these machines will be in operation whether all of the flaws are worked out or not.

Adoption of a mechanical tobacco harvester, plus removal of barriers to larger production units, could reduce labor input by about half from 471 hours per acre in 1967 to an estimated 246 hours in 1975, according to an ERS report. The peak harvest demand for labor would be more than halved, and output per hour



would be approximately doubled.

Although mechanization would be costly in flue-cured tobacco areas, ERS estimates that the mechanical harvester is the least costly means to harvest when operated to capacity (about 40 acres) and wage rates exceed \$1.35 per hour. The system would require an estimated \$52,000 capital outlay—\$40,000 for bulk-curing barns and \$12,000 for the harvester and support equipment.

The winter produce industry is another one that drives home the need for mechanization to keep up with competition. Last year Mexico exported to the U.S. a record \$191-million worth of fresh and processed fruits and vegetables. It supplies most of our fresh tomatoes in the winter.

In Florida, a tomato harvester for fresh-market tomatoes will be given a commercial test for the first time this winter season by the Florida Tomato Committee and the University of Florida. It will be tested on a new machine-harvestable variety of tomato that has a tougher skin and a jointless stem. The test will evaluate buyer and consumer acceptance of the tomato, practicability of the machine harvest system from the grower's standpoint, and the economic feasibility of the machine harvest system.

"Predictions are that any fruit or vegetable crop that cannot be mechanically harvested will disappear from the consumers' shopping lists because of economic competition from fruits and vegetables that can be mechanized," according to researchers at the Rural Manpower Center of Michigan State University.

With labor becoming increasingly more costly and less available, an ERS study reported that even on relatively small farms, farmers are being pressured into adopting labor-saving equipment.

New machinery that cuts the amount of labor required on the farm is constantly being tried and adopted.

Tart cherries are now mostly machine harvested. They're loaded into

Picker Power

The cotton picker is considered one of the great laborsaving machines of all time.

First commercially produced in 1941, it does the work of nearly 2 million hand pickers. A two-row picker will pick as much cotton as 50 hand pickers.

Last year, 98 percent of our cotton crop was harvested mechanically—about 70 percent by the cotton picker and the remainder by the cotton stripper.

The picker uses rotating spindles which enter the cotton plant and remove the cotton lint and seed from the bur. The burs, unopened bolls, and plants are left intact.

The stripper removes burs, bolls, and some leaves and stems from the plant. Necessarily a once-over operation, the stripper is used only after most of the crop is mature. (5)

tank trucks full of cool water and ride to the processing plants in this cushion.

A cling peach harvester shakes the tree limbs, catches the fruit, and conveys it to a bin. A minimum crew of three to four workers can harvest 6 to 10 bins, averaging 1,000 lbs. each, in an hour and 4 to 5 acres in a day. This compares with a crew of about 20 workers for hand picking this output. Other possible uses for the harvester include prunes, free-stone peaches, apricots, almonds, and walnuts. A shake-catch method is now being used in harvesting apples, and a shake method is being tried for citrus harvesting in Florida.

A cucumber harvester averages an acre an hour and can be expected to harvest 100 acres per season.

An experimental strawberry harvester combs plants and strips off berries. The labor shortage is so acute in some areas where strawberries are produced that grower groups are earmarking funds for harvester development. Such development will help growers meet competition from Mexico, which continues to ship in increasing quantities of

fresh and frozen berries.

In Delaware, 12 harvesters took care of 1,200 acres of asparagus at about 6 acres per machine hour—replacing 400 workers. The interest in mechanized harvesting there grew after 1969 when 5,000 acres in Delaware and New Jersey went unharvested because of a shortage of workers. A trade source estimated last year that for the farmer with 50 acres, the cost of hand harvesting would be about \$115 per acre, whereas the cost of a harvester, at around \$6,000, would be paid for in 2 years. The fact that the machines deposit spears in a jumble concerns processors, but this problem is being solved through hand sorting or by mechanical devices that align about 85 percent of the spears.

New machinery for reduced tillage and stubble mulch puts tilling, planting, fertilizing, and pest control into one operation.

An onion harvester digs and tops the bulbs, recovering better than 90 percent of them.

Long rubber fingers in an experimental harvester snap pineapples off, but to be economically feasible, a breakthrough is needed in getting pineapple to ripen uniformly in the field. Even then, mechanical harvesting will be feasible only if there is a continuing severe labor shortage.

Some farm machinery, introduced only a few years ago, has already dramatically changed the harvesting of the crop for which it was tailored.

For example, a mechanical grape harvester was introduced in Washington in 1968. That year, barely 1 percent of the State's grape crop was harvested mechanically. By 1970, more than 54 percent of the grapes were mechanically picked.

Dates on palms 30 to 40 feet high, are now mostly harvested by cutting the bunches and lowering them to a shaker trailer. The fruit is shaken into bulk bins. About 80 percent of the 1966-67 crop was harvested mechanically. Labor inputs were reduced by 80 percent and harvest costs cut in half—down to 20 percent of total production costs. (1)

Getting the Zig Out Of Zagging Hop Prices

Hops are to a brewmaster what spices are to a gourmet cook: they're indispensable flavoring agents.

And just as minute amounts of spices can season a dish, it takes but a hint of hops to give beer its characteristic taste and aroma. Last year the brewing industry's "hopping rate," as it's called, averaged under a quarter of a pound to a barrel of beer.

Hop demand doesn't change much from one year to the next. Thus, small changes in supply can cause big changes in price to hop growers. In 1957-60, for instance, the spot price for the popular Washington State seedless hops varied from \$1.40 per pound to just 15 cents.

Today some 225 farmers produce hops on a commercial scale in parts of Washington, Oregon, Idaho, and California. New York also used to be a big hop State, but an attack of downy mildew practically wiped out the N.Y. industry and not since World War I has New York been an important hop producer.

Though balancing hop supply with

demand is a constant struggle, growers are using a couple of devices to protect themselves from volatile prices.

One way is by selling under forward contracts to dealers, who in turn sell to the breweries. Most of the crop harvested this past August and September, for example, was sold on forward contracts over the past 3 years. The contracts also give breweries assurance of having a steady supply of specific hop varieties that are necessary to maintain uniform quality in brand-name beers.

Another method for softening price extremes is the Federal marketing order. Under the present order, which became operative with the 1966 crop, each year the Secretary of Agriculture establishes the amount of saleable hops that will be available to meet domestic and export needs. No easy task, for the U.S. is the world's second biggest hop producer and exporter after West Germany, as well as the world's leading hop importer in some years.

In setting the volume of saleable hops, the Secretary also considers the recommendations of the Hop Ad-



The female flowers, or "hops," are the ones that produce the cone-like structures whose petals and seeds give beer its characteristic aroma and taste. The cones themselves are 1-4 inches long, yellowish green in color, and papery to the touch.

The male plant, which is coneless, is used to breed improved hop varieties. Otherwise, males are considered troublemakers and have no place in a commercial hop yard. All of this gender are eliminated from the area.

In the event the sexes meet, the product of the union is a seeded hop (unfertilized cones are seedless)—which brewers feel is undesirable for beer making (3)

ministrative Committee and other information. This committee of growers, appointed by the Secretary, has responsibility for overseeing the program's operations.

The production estimate includes the States of Washington, which in 1971 had an output of 30 million pounds out of a U.S. total of 46.5 million; Oregon, with 8.2 million; Idaho, nearly 6 million; and California, somewhat over 2 million.

The total volume of saleable hops from the '71 crop was determined to be 82 percent of the base allotment of 59 million pounds. Each grower may market 82 percent of his base allotment. Anything in excess of this amount may be put into a reserve pool to be sold when market conditions permit, or withheld from the market. The reserve pool from the 1970 harvest amounted to roughly a million pounds, and was offered for sale for about 70 cents a pound and most of it has been sold.

Since the mid-1960's and the start



HOPS IN THIS COUNTRY are grown on high-wire trellises. In the early spring, strong twine is staked to each hops hill and tied to stringing wires above the rows. When the young vines grow to about 2 feet, "training crews" come in to wind the vines around the twine supports. Photo above shows the September harvest in Canyon County, Idaho. Vines are individually cut and laid on a truck for hauling to a plant where picking machines strip the hops. Hop cones are then dried, put through cooling chambers, and baled for shipment or storage.

of the present marketing order, prices to growers have improved in terms of the season average—which generally ranges between the spot price and the price of forward contracts. The season average price rose from 46 cents per pound in 1965 to 56 cents in 1970. Prices have also been more stable than in the 1950's.

Demand for hops does not show much variation from one year to the next, though the long-range picture shows a bright trend, judging by statistics on beer drinking. Trade sources report the per capita use in 1970 averaged 18.6 gallons, up from 15.9 in 1965.

A fair share of the hops used in this country are imported—in the 1970 season, about 40 percent of the more than 30 million pounds used by domestic beer makers. Most came from Europe, whose hops are claimed to have a different aroma and flavor than American varieties.

In 1970/71 (September-August year), we also exported around 23 million pounds of hops or their equivalent in hop extract. Main markets are in Latin America and Western Europe.

A growing proportion of hops in the U.S. and abroad is being marketed in the extract form. Besides being more compact than dried hop cones and easier and cheaper to transport, the extract adds more body and flavor than an equivalent amount of the dried product. In fiscal 1971, domestic brewers used over 2 million pounds of extract in addition to dried hops. (2)

Sput Seen In Southern Milk Use

By 1975, Southerners are expected to be consuming 30 percent more fluid milk and fluid milk products than they were in 1965.

An 11-State study of the South, including the Nation's Capital, shows Florida, Mississippi, and Washington, D.C., will experience the greatest gains in fluid milk usage. Florida's indicated consumption will be up 46 percent, Mississippi's, 44 percent,

and Washington, D.C.'s, 43 percent. The smallest increase is projected for Texas, up 21 percent. A changing population and increasing urbanization throughout the South is concentrating the demand for milk in relatively small geographic areas.

Milk supplies in the 11 States are expected to tighten relative to demand in the 10-year span. Production in 1975 will likely exceed consumption by 12 percent, against 17 percent in 1965.

While in 1965 only Alabama showed a deficit in milk production, Texas and Florida are also expected to have a deficit by 1975. The percentage of excess production in at least four States—Arkansas, Mississippi, North Carolina, and South Carolina—is expected to be sharply curtailed by 1975. Such changes in the supply-demand balances in turn bring about changes in processing and milk flow patterns in the South.

The study also reported that the trend toward larger, more efficient processing plants located close to consuming centers will likely continue. Conditions permitting, milk production will also tend to be located close to processors. (4)

18 States Still Control Producer Milk Prices

A large part of fluid milk sales are regulated by either State or Federal marketing orders.

Territory covered by Federal orders has been steadily widened over the years. But there are still 18 States plus Puerto Rico that maintain control over fluid milk prices received by producers (Ala., Calif., Hawaii, La., Me., Mass., Mont., Nev., N.J., N.Y., N.C., N.Dak., Ore., Pa., S.C., Vt., Va., Wyo.).

Outside of Federal orders, these States price about 15 billion pounds of milk a year or roughly a seventh of all fluid milk farmers sell to plants and dealers.

Since 1962, however, controls on producer prices have been discontinued in Florida, Georgia, Mississippi, and New Hampshire. Added to the list were Hawaii, North Dakota, and South Carolina.

Most but not all of the States with producer price controls also have authority to set wholesale and retail prices. In both 1968 and 1971, 17 States set prices at wholesale and 16 at retail. (6)

PRELIMINARY FINDINGS FROM THE 1969 CENSUS OF AGRICULTURE indicate a continued sharp increase in large commercial farms in the Midwest. In six States (Iowa, Illinois, Wisconsin, Minnesota, Michigan, and Indiana), farms with gross sales of \$40,000 or more nearly doubled in number during 1964-69, compared with a 63-percent increase in the previous 5 years. Farms in sales classes of \$20,000 and under declined by 18 to 33 percent. In 1970, the six selected States had farm cash receipts of \$12.7 billion, about 1/4 of the U.S. total. (7)

Economic class	Number* (1000)			Percentage change for six states	
	1959	1964	1969	1959-64	1964-69
Commercial farms with sales:					
\$40,000 and over	20	33	65	+63	+98
\$20,000 - \$39,999	62	92	119	+48	+29
\$10,000 - \$19,999	172	171	133	-1	-20
\$5,000 - \$9,999	214	154	104	-28	-33
\$2,500 - \$4,999	145	104	81	-29	-22
Less than \$2,500	232	185	152	-20	-18
Total	846	739	653	-13	-12

Source: The 1959, 1964 and 1969 Censuses of Agriculture.
* In Iowa, Illinois, Wisconsin, Minnesota, Michigan, Indiana.

Farm Boss Often Labors Longer Than Hired Help

Not only does the average farmer generally have less leisure time than nonfarm workers, but on many farms the operator puts in more hours a week than his hired help.

A report published by USDA examined the average weekly hours of work by the operator, his wife, other family members, and hired help. The operator's workweek varied with the type of farm, size of operation, and location.

In 1966 the operator's workweek ranged from 17 hours on small marginal farms, to 71 hours for the dairy farmer with gross sales of \$40,000.

For the operator who hired help, the workweek ranged from 21 to 61 hours for the operator; 15 to 24 for his wife; 16 to 27 for other family members; and 34 to 49 for the hired hands. On farms that didn't hire labor, the operator's hours ran from 27 to 57 hours a week; his wife's, from 15 to 25 hours; and other family members, 12 to 24 hours.

The higher the operator's gross income, the more hours he worked. For example, on farms with \$40,000-plus in sales, the operator's workweek ranged from 55 to 70 hours.

On the average, operators in the Mountain States who hired help put in a longer workweek than those in any other section of the country. Their hours ranged from a low of 36 for fruit and nut farmers to a high of 74 for dairy farmers. Compared with other regions, operators in the Southeast and Delta States worked fewer hours, due in part to a plentiful supply of low-cost labor. (11)

Some 200,000 May Leave Tobacco Areas in 1970's

If history repeats itself, large Eastern cities can expect a continued influx this decade of Southern rural residents, especially blacks, from the major cigarette tobacco-growing areas.

An ERS demographer estimates a

possible net migration in the 1970's of some 200,000 persons now living in 73 counties that are highly dependent on flue-cured tobacco.

This will take place unless greater local economic development occurs and unless Negroes find the counties more desirable as places of employment and residence.

In the past decade, blacks accounted for 75 percent of those leaving counties highly dependent on

flue-cured tobacco, although they accounted for only about 37 percent of the resident population.

Historically, they've gone up the Atlantic Coast to large cities such as Washington, Baltimore, Philadelphia, Newark, and New York.

Many of the tobacco areas have had enough growth in nonfarm employment to offset some of the reduction of workers in farming, but relatively few of these jobs have gone to blacks.

The migration from heavy tobacco-producing areas comes in the wake of reduction in labor requirements for the crop. Laborsaving techniques, market stagnation, regulatory changes, and other trends have lessened manpower requirements in tobacco and will likely continue to do so.

Flue-cured is the most popular tobacco grown in the United States, and North Carolina is the country's leading producer of tobacco products.

The ERS analyst also studied population shifts in counties that rely heavily on growing burley tobacco, the second most common type in the U.S. Kentucky is the leading State in burley production.

Areas dependent on burley tobacco aren't expected to have nearly as much outmigration this decade as the flue-cured areas. For one thing, Lexington, Ky., is in the Bluegrass region where much of the burley tobacco is grown, and nonfarm jobs are opening up both in the city and in the industrial plants spreading out from Lexington.

The 50 counties in which burley tobacco is intensively grown gained nearly 3 percent in population in the 1960's, compared to a decline of nearly 6 percent in the 1950's.

Flue-cured tobacco-growing counties, however, had a much bigger population in 1960 than burley-dependent counties—2.2 million compared to 600,000, after expanding 1.6 percent in the 1950's. However, the flue-cured counties had lost .7 (seven-tenths) percent of their 1960 population by 1970 because of outmigration. (9)

People Pressures

"No reader will come away satisfied that all is well," says the preface to the 1971 Yearbook of Agriculture. The contributing authors, however, convey an undercurrent of optimism, as they examine and tackle many problems associated with population pressures.

The Yearbook's theme is *A Good Life for More People*.

Maybe another 75-100 million people will be added to the Nation's population by the 21st Century. Where will they live and work? We may need 400 or more new cities and towns by the year 2000, many of them to be located in rural America. Can they be provided?

This book explores the possibilities for meeting such needs as a big increase in rural housing, better community facilities, more industry and jobs, better planning and zoning, and improved vocational training in the countryside.

Looking beyond this century to the next, the Yearbook authors approach the population problem by laying out the needs of more people, describing what is already being done, and seeing how much further we need to go.

Among the book's 80 articles are "100 Million More People Coming Up?," "Population Distribution Issues," "Quality of Life in the Rural Community," "The Task Ahead for Food and Fiber," "The Future of Farmers and Farming," and "Pollution Poses Threat to Man, Farms, Nature."

For copies of the Yearbook, write the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Price is \$3.50 (10)

The Year of Two Winters

The climate is one of the major forces farmers have to contend with, and some people fear that man is influencing it for the worst. But a distinguished group of environmental scientists meeting in Stockholm last summer agreed that the combined effect of all the gases, dust particles, and vapors released into the atmosphere by man can't compare to the damage done by natural forces.

The explosion of Tambora volcano on the Indonesian Island of Sumbawa, between April 7 and 12, 1815, is a case in point.

This was one of the largest eruptions of the last 2 centuries. For 3 days it caused darkness at a distance of 300 miles, and the explosions could be heard nearly 1,000 miles away. Most important of all from a weather standpoint, the volcano threw 37 to 100 cubic miles of dust, ashes, and cinders into the air.

Tambora's cloud of natural pollutants enveloped the globe, shutting out the sun and lowering the earth's temperature by an average of 1.62°F. during 1816. In New England, where a drop in temperature of a few degrees can mean the difference between a severe frost and no frost at all, the volcano was largely responsible for a year when Christmas could have been held in June. There was little rejoicing among farmers, however.

Frost covered the ground at least once during every month of the year, and in July and August, the white crystals were found as far south as Pennsylvania and New Jersey. . . . Snow fell during 10 months of the year. . . . Drought struck New England in the fall. . . . A killing frost on September 27 destroyed all of northern New England's important corn crop.

June was the most remarkable month. In Danville, Vermont on the night of June 6, water froze an inch thick. On the night of the 7th and the morning of the 8th, sleet and snow fell, accompanied by high winds, and drifted 18 to 20 inches deep. "It was indeed a gloomy and tedious period," as the local newspaper said.

The almanacs called 1816 "the year of two winters" and "the year without a summer." As if the summer of 1816 hadn't been enough, the next winter was unusually harsh also.

For a generation, reports of cheap, fertile land to the west had lured less prosperous New England residents. Now, faced with Arctic weather, drought, and brown fields, an increasing number of farmers decided to try their luck away from the land that the Puritan, William Bradford, had called "a hideous and desolate wilderness." In 1819 the Connecticut Gazetteer wrote, "The current of immigration from this state has swelled to a torrent."

New England did not quickly forget 1816. The older books on weather, meteorology, and climate discuss it at length. Even today, 1816 is cited as an example of the way nature can upset her own seasonal balance. The year has come down through history as *the* cold year.

Oddly enough, according to weather records kept at Williamstown, Massachusetts, 1816 was only the 7th coldest year between 1816 and 1838. Some months—February, October, November, and December—were actually warmer than usual.

But 1816 stood out as a rarity because the temperature from May through September was far below average. If the exceptionally cold months had not come in the middle of the year, or if they had not followed on each others' heels, 1816 would have been just another year for New England's farmers. (8)





With annual food intake valued at over \$35 billion, the giant food service industry is made up of many individual markets with demands and requirements as diverse as the foods they serve.

Nearly \$1 of every \$3 spent for food in the United States goes to the food service industry.

In 1969, the retail value of food and non-alcoholic beverages served in away-from-home eating places was estimated at \$35 billion—up from \$28 billion only 3 years earlier.

The food service industry was the subject of an intensive study by USDA. One phase of the study focused on the type, quantity, and value of foods used by food service operators. The ultimate goal was to identify and better understand the food requirements of this market on a commodity basis.

Throughout 1969, the study team assembled data from nationwide interviews with nearly 3,000 food service operators. Excluded from the analysis were outlets in elementary and secondary schools, military services, Federal hospitals, and a few other small-volume operations.

Nearly half of all food used by the industry went to only 14 percent of the eating places—those with annual sales over \$100,000. Close to 40 percent of the outlets had sales below \$20,000. Their food share was less than 15 percent.

Researchers coined the term “dinner platter” to depict the mix of foods served by food service outlets. “Dinner platter” is a counterpart to the familiar “market basket,” which describes the variety and value of foods consumers buy in grocery stores for use at home.

For an idea of what fills the dinner platter, individual food items were classed into 16 major food groups. Vegetables and dairy products and ices were found to be the main groups. Each accounted for over 18 percent of the quantity of all food received by the industry in 1969.

Food groups that made up 5–10

percent of total tonnage were beef, bakery products, poultry and eggs, sugar and sweets, and beverages. Prepared foods and mixtures took the smallest portion of the platter, with less than 1 percent of the total.

The dinner platter shapes up differently when portions are figured in dollar values. Beef captured top spot. Its value was more than 20 percent of the industry's entire food intake, though it accounted for under 10 percent of the quantity of all food used.

Eight food groups each accounted for more than 5 percent of the total value of foods received. Besides beef, there were other meats, bakery products, dairy products, beverages, vegetables, fish and shellfish, and poultry and eggs.

Within major food groups, one item often dominates in quantity used, while another outranks it in value. In the fats and oils class, food service outlets used more solid shortening than butter, but spent more for butter. Similarly, ground beef accounted for 44 percent of total beef used by away-from-home eating places. But steak led in value because of its higher price per unit.

Of several thousand individual food products, a scant 23 made up over half the estimated 37.2 billion pounds served "out" in 1969. Five were meat and poultry products, five were vegetables, and three were dairy products.

Best sellers—more than 1 billion pounds each—included fresh, whole white milk, ground beef, white potatoes with peel, cola soft drinks, and hamburger buns.

Dollarwise, 24 separate food products had a total purchase value of more than \$100 million. Beef steak led this list—eating out places used over \$940 million worth. Ground beef was a close second, with a total value of \$832 million.

All this food was divvied up in varying portions among the numerous types of food service outlets. Essentially, the outlets belong to one of two sectors—public and institutional.

Outlets in the public sector—be they drug store soda fountains or fashionable restaurants—garnered 82 percent of all food moving through food service establishments. Typical of institutions that used the remaining 18 percent are hospitals, universities and homes for children or the elderly.

Separate eating places—outlets that aren't secondary features of another business, such as tearooms in retail stores—were the single most important segment of the away-from-home market.

In 1969, separate eating places had more outlets, individual consumer transactions, and dollar sales than any other type of food service establishment. This segment accounted for 58 percent of the quantity and 59 percent of the value of all food products received by away-from-home eating places.

Other food service businesses whose shares of the industry's dinner platter topped 5 percent—in either quantity or value—included hotels and motels, hospitals, and universities.

Though separate eating places dominate, the food service industry is composed of many diverse markets, each with specialized needs and demands. Efficient distribution of food products requires that these markets be identified in terms of specific commodities. For example, institutions accounted for only 18 percent of all food used by the industry, but more than 40 percent of its juices, fruits, ades and drinks.

Similarly, retail stores and drug stores cornered only 6 percent of all foods on the dinner platter, but almost 20 percent of the ice cream. And convalescent, rest homes and homes for children accounted for a mere 3.4 percent of all foods, but over 37 percent of the market for prune juice.

Less than 4 percent of the industry's foods were served in outlets in factories and mills. But workers made up 12 percent of the market for chili con carne, and 11 percent for prepared food mixtures. (12)

Pick of Cut Flowers Shipped by Three States

If California, Florida, and Colorado suddenly stopped all out-of-State shipping, retail florists throughout the country would be hard pressed for cut flowers. In 1970, for example, California and Florida produced nearly three-fourths of the gladiolus crop, over half the carnations, standard and pompon mums, and about a third of all roses and potted chrysanthemums.

To find out more about marketing activity at the main shipping points, ERS researchers interviewed representatives of 156 firms that had annual out-of-State flower shipments of at least \$10,000. Eighty-three of the businesses were in California, 58 in Florida, and 15 in Colorado.

About 70 percent of the shippers were growers. Only 2 percent were cooperatives or pools. Wholesalers made up the remainder.

Most of the shippers had gross sales ranging from \$100,000–\$500,000. But 12 percent of the growers and 22 percent of the wholesalers had sales that topped \$1 million.

The large-volume growers are extending their operations forward along the marketing chain to include shipping and distribution to retail outlets. More than a fourth of the sample growers made direct out-of-State deliveries to retail florists in 1969. Direct sales to supermarket chains are also budding in importance.

Meantime, small-volume shippers are declining in number and significance in marketing. And brokers of floral crops are fast disappearing. Several Florida growers, however, act as brokers during the non-producing season by procuring floral supplies for their regular customers.

Two types of wholesalers operate in the shipping point markets. Some wholesalers buy all the flowers they sell. Others grow a portion of their supplies and buy the rest. Most of the flowers are provided by nearby growers, who often prefer to market

locally rather than develop out-of-State operations.

The densely populated north central and northeastern regions are the major market outlets served by the three shipping points. Florida shippers also cover southern markets, while California and Colorado shippers make important sales in the mountain and west south central regions.

Most cut flower shipments from California and Florida go to floral product wholesalers in large cities. Direct sales to retail florists rank second in importance.

About half the firms spent money for product promotion and advertising in the year prior to the interviews. In addition to standard advertising methods, promotional activities included donations of cut flowers to design schools and conventions. Advertising outlays in California averaged \$3,000 per firm; in Florida, \$6,400; and in Colorado, \$6,900. (13)

Feed Industry Analyzed In First Full Survey

Feed is one of the biggest expense items for U.S. farmers, who last year shelled out more than \$7 billion for purchased feeds, of which about half was for commercial formula feeds.

Until recently, however, not even the members of the formula feed industry—the feed manufacturers of America—knew exactly how big they were. They didn't know, for example, the number of firms in the feed mixing business . . . their locations . . . their production vs. capacity to produce . . . and the breakdown of output by feed group and type of firm.

The industry was not alone in wanting these vital statistics. The Agricultural Stabilization and Conservation Service also had need for them, as did ERS in doing economic analyses of the formula feed industry. ASCS, incidentally, is the USDA agency responsible for emergency and disaster preparedness. ASCS needs to know where it can quickly turn for a supply of animal feed in the event that normal marketing patterns are disrupted.

To get a more complete picture of this industry, ERS in cooperation with ASCS, in mid-1970 conducted a nationwide survey of feed milling establishments.

The survey found more than 13,000 establishments with feed milling operations. In the year prior to the survey, these firms turned out some 96 million tons of formula feed. Around 7,300 firms accounted for 97 percent of this output. Only 2 percent of these firms produced more than 100,000 tons each in 1969.

Texas led all States in formula feed output, with nearly 9 million tons; California and Iowa were next, each with 6 million. Regionally, the Corn Belt was No. 1, with 21 million tons. Its output was twice as large as the regions that ranked next, the Northeast and Southern Plains, each with about 10 million.

Of firms reporting production of 1,000 tons or more, the rated capacity totaled 145 million tons, based on 48 weeks of 40 hours each. Pennsylvania had by far the largest State capacity (37 million tons), although actual production in 1969 was less than 3 million tons. Among regions, the Northeast had the largest production capacity (44 million) followed by the Corn Belt (29 million).

In general the lowest use of capacity was in the Northeast, and the highest use in the Delta, Southeast, and Pacific regions.

Establishments producing less than 10,000 tons reported the highest amount of unused capacity.

Roughly two-thirds of the 96 million tons consisted of primary feed formulation (mixed by the firm "from the ground up" using single ingredients and sometimes a premix of micro-ingredients). Secondary feed formulation (farm grains combined with protein supplements) was reported at 28 million tons.

Formula feed was disposed of as follows:

Twenty-four percent was sold at wholesale and 20 percent at retail; 22 percent was fed to own livestock and poultry; 12 percent was used in custom feeding; and 22 percent was custom ground and mixed. (14)

Carrot Market Runs On Efficient Pricing

Large retail firms often bypass wholesalers and buy carrots and other vegetables directly from production points. In turn, commodity prices tend to be established in these shipping points, rather than in centralized wholesale terminal markets.

The question has been raised: can prices perform efficiently and competitively when they're made in many locations in which only a portion of total supply and demand are known to the buyers and sellers?

For answers, researchers probed the fresh winter carrot market during 1966-68. The study focused on Texas and California shipping points, and 10 consumer centers dispersed throughout the U.S.

Price differences between shipping points and consumer centers were found to be consistent with marketing costs. Prices for carrots in 48-pound lots moving to eastern markets from California and Texas gained about 2½ cents per 100 miles.

For example, weekly carrot prices during the study period averaged \$3.72 (for 48 pounds) in Texas' Lower Rio Grande Valley. The price jumped to \$4.58 in St. Louis, and \$4.78 in New York.

Storage and handling costs tended to be the same in cities close to shipping points as in distant cities. Storage charges are generally associated with preventing quality losses from disease or spoilage.

Carrot prices were closely aligned among all locations in the marketing system. Prices at consumer centers equaled those at shipping points plus a constant charge for shipping and handling. Thus, consumer center prices were very predictable once shipping point prices were known.

Week-to-week changes in shipping point prices were caused by variations in the quantity, size, and quality of available carrot supplies. The marketing system for fresh winter carrots performed well in transmitting price changes forward along the marketing chain. (15)

Billies on the Runway



The Angora goat—father of mohair—has been out of the spotlight lately and would like to climb back on the fashion runway with an assist from the Mohair Council.

The Angora goat would like to make a comeback on the fashion runway.

His long, lustrous, and strong coat—mohair—has been a hit many times in the past in blends for sweaters, suits, even bathing suits. At a peak of popularity in the 1940's, better than four-fifths of all women's sweaters were a wool-and-mohair blend.

But lately, designers just haven't been using much mohair. Add to this the severe competition this fiber faces from synthetics and foreign production, and the result is declining domestic production—especially since 1965. Last year production was 21 percent below the year before. Prices have dropped, too. The value of production in 1970 (\$6.5 million) was half that of 1969.

Since nearly 60 percent of the Nation's production of mohair goes into clothes, the mohair industry is focusing new promotion on the fashion world.

The Mohair Council of America is considering recommendations for improving demand for mohair by:

- Sponsoring a fashion award for the best design using mohair.

- Promoting use of the mohair mark (a stylized Angora goat with the word mohair at its base) in labels to show customers the fabric contains mohair.

- Pushing for legislation requiring fabrics to show mohair content. Under present law, fabric containing mohair mixed solely with wool (the most common blend) can be—and generally is—labeled 100 percent wool. Customers have no way of knowing if the garment contains mohair.

- Developing publicity materials aimed at fashion designers, buyers, and the general public to flag attention to the qualities of mohair—that

it adds luster, resiliency, wrinkle resistancy, durability, and texture to fibers with which it is blended.

- Encouraging improvements in the mohair industry, including better grading, sorting, and quality control of fibers; development of finer mohair through selective breeding; and research and development to improve mohair qualities and to create new markets for mohair.

One of the reasons domestic fabricators are substituting synthetic fibers for mohair is that both the supply and price of mohair are unsteady. This instability is partly due to the fact that mohair producers have no way of knowing when the fashion world will spin in mohair's favor. The supply thus is often too much or too little, and prices fluctuate accordingly.

To take up slack when domestic demand declines, the industry long ago established a foreign market and is especially dependent on Britain, the world's biggest mohair customer. An average of 43 percent of our do-

mestic production is exported annually to several European and Oriental countries.

Now, the United States faces stiff foreign competition from South Africa. British buyers have representatives in South Africa and are able to contract for a steady supply of mohair. In addition, South Africa has established higher fiber quality standards and a grading system superior to that of the U.S.

In a recent study sponsored by the Mohair Council, researchers recommended that the U.S. develop grading methods to counter this competi-

tion and concentrate on raising a finer mohair for the foreign market.

One of the industry's key policies will have to be flexibility, with emphasis on new as well as existing markets. Continued efforts will need to be made to develop markets less affected by changes in fashion and foreign demand. This will help stabilize demand for mohair—so critical in competing with manmade fibers. Without a stable market, mohair suffers from fluctuations in supply and demand as well as in price.

The United States is still the world's biggest producer of mohair,

and most of the production—96 percent—is in Texas. Other States with mohair production include Arizona, New Mexico, Missouri, Utah, Oregon, and California.

The billies and nannies are clipped twice a year when they have a four-to six-inch coat. The kids' coats—the first three clippings—usually command a premium for their fineness.

Not among the least interested in the fate of mohair is the Angora goat. When the market doesn't look good and prices are down, ranchers usually sell the goats for slaughter to recoup some of their losses. (16)

Cigarette Makers Pack Less Tobacco Per Smoke

Though cigarette output rose to record levels last year, manufacturers used about the same amount of tobacco as in 1969. The reason: less tobacco per cigarette.

During 1970, cigarette makers used an estimated 1.96 pounds of tobacco (unstemmed processing weight) per 1,000 cigarettes—4 percent less than in 1969. This year, with the leveling of cigarette output, total use of tobacco in cigarettes will probably drift below 1970's 1,143 million pounds.

Over the past 2 decades, leaf tobacco per cigarette has been tapered by one-fourth. Manufacturers began the cutback partly under pressure of leaf tobacco's high costs, and a desire to use the entire tobacco leaf, including midrib.

The use of filters has been most closely associated with the lower tobacco content. Most filter cigarettes have shorter tobacco columns than nonfilter brands, and they average about one-seventh less tobacco per cigarette.

Besides shifting production to filter cigarettes, manufacturers have used these other devices to scale down tobacco use: lengthening the filters, making a slimmer cigarette, and accelerating use of sheet tobacco and stems.

Sheet tobacco is made from finely ground and compressed stems, scraps, and other fine tobacco particles that were formerly discarded.

Manufacturers have realized considerable savings through substitution of sheet tobacco for leaf tobacco. In 1967, for example, stems and scraps cost about 21 cents per pound, compared with 98 cents for leaf.

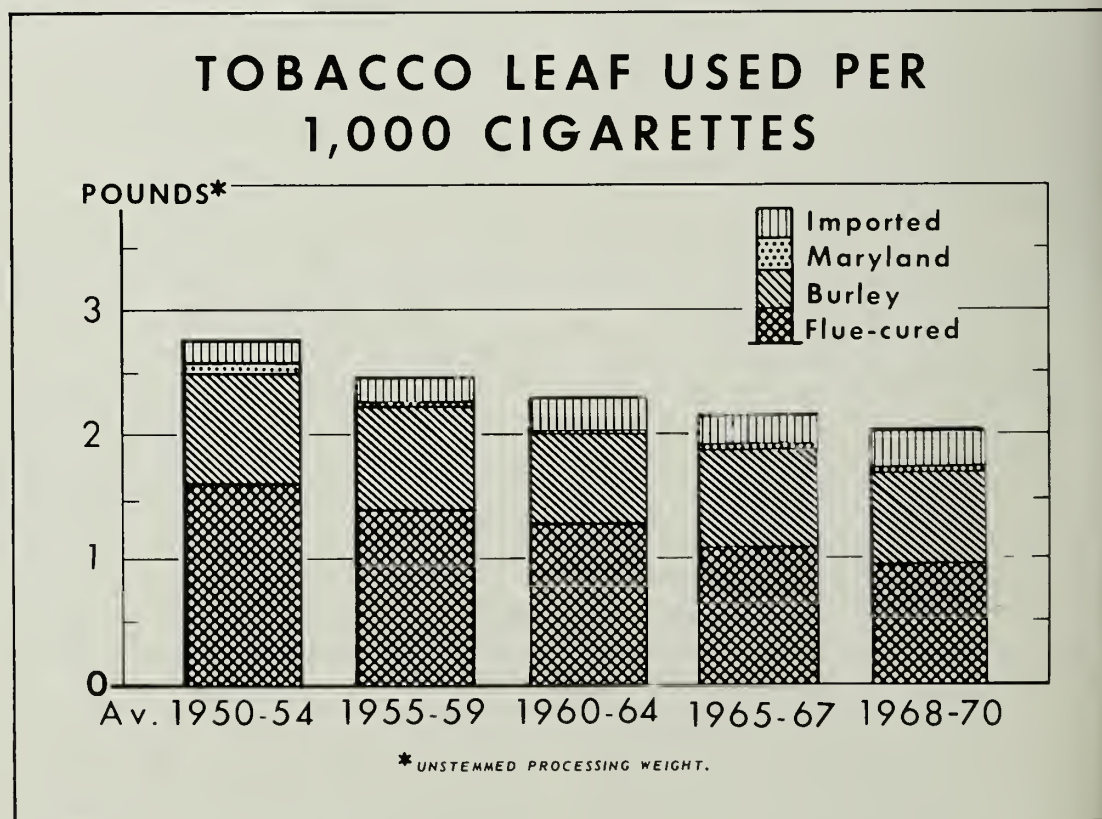
All signs point to a continued downtrend in cigarettes' leaf content over the next few years. Under various assumptions, tobacco input per cigarette may drop 6 to 14 percent during 1970-75.

If filter cigarettes' share of total

output goes up 10 percent, manufacturers could conceivably trim tobacco input for cigarettes by 6 percent.

A puffing process—introduced in 1969—if widely used might decrease the tobacco/cigarette ratio even further. One variation of this process involves treating tobacco leaf with freon gas to expand the cells and enlarge leaf size. Thus, fewer leaves are required to make a carton of cigarettes.

If the puffing process grows as rapidly as filter cigarettes did in the 1950's, manufacturers might be able to pare tobacco leaf per cigarette around one-seventh by 1975. (17)





BRITAIN'S MEMBERSHIP IN THE EC: NEW MIX FOR FEEDSTUFFS?

With the entry of Britain into the European Economic Community, feed compounders in the U.K. may be looking for substitutes for feed grains in livestock rations.

Sales of U.S. feed grains to Britain could be hurt as a result of that country's membership in the European Community. However, other feed ingredients will enjoy a stronger demand, according to a new study by ERS.

The reason: the prospect of higher prices for cereal grains in the U.K. and the likelihood that efficient compound feed manufacturers would turn to using more substitutes for feed grains. Many of these substitute ingredients—like soybeans and meal, corn gluten meal, and mo-

lasses—are wholly or primarily imported. So, this part of the shift is seen as a trade gain for the exporters, the U.S. included.

Acceptance by the U.K. of membership in the EC will mean acceptance of the Community's Common Agricultural Policy (CAP). Exact price changes are uncertain, but it's generally agreed that the CAP will trigger sizable increases in feed grain prices within the U.K., possibly as much as 20-25 percent. This is due to the CAP's higher price support levels and variable import levies that are aimed at bringing import prices in close mesh with domestic market prices.

Although not specifically analyzed in this project, domestic prices—maintained by CAP support programs—should stimulate feed grain production in the U.K. At the same time, the variable levies would tend to reduce feed grain imports from traditional supplying countries such as the U.S.

The U.K.'s agricultural economy revolves around feed and livestock, with two-thirds of the value of agricultural products originating from livestock and livestock products. Farmers spend about \$1.5 billion a year on feedstuffs, or nearly 30 percent of their total expenditures. Grain production in Britain has been increasing, but imports continue to be heavily relied upon. In 1970, about 40 percent of domestic grain needs were imported.

These imports come in at a price lower than what U.K. producers receive for their grains, and tend to keep domestic market prices low. So beginning under the Agriculture Act of 1947, the U.K. government reimbursed producers for the difference between the market price and a preestablished guaranteed price. The costs of this program have been substantial.

Partly for this reason, the U.K. in July 1971 began phasing out the deficiency payments in favor of a variable levy system. The variable levies of the EC are considerably above the U.K.'s. Thus, feed grain imports

Britain Accepts The CAP

"Champagne corks popped at 5 a.m. on June 23, celebrating the United Kingdom's acceptance into the Common Market after nearly a decade of negotiations . . ." reported the European Community's Information Service.

About the only important business left unfinished that June morning of 1971 in Luxembourg was the issue of British access to coastal fishing grounds. Otherwise, Britain's negotiating team was agreeable to accepting the Community's Common Agricultural Policy (CAP), including the alignment of U.K. agricultural prices with the EC's within 5 years upon entry in 1973. U.K. prices would be raised in six steps to bring them up to Community levels.

U.K. tariffs on fruits and vegetables would be reduced in five steps, of 20 percent each, beginning December 1973.

Britain's own price support program would be dismantled. However, the U.K. could continue with the present system of grants and subsidies to support incomes of its 17,000 hill farmers, providing it conforms with EC policy.

U.K. membership in the EC was ratified by the British Parliament on October 28, 1971. However, legislation aligning U.K. policies with those of the EC must still be enacted. (19)

under EC membership will drop more sharply than if the U.K. were to continue with its import policy adopted in July 1971.

Regardless of import policy, overall use of compound feeds in the U.K. will continue to increase slightly. It may exceed 10.6 million tons by 1980 (up from 10 million in 1968), assuming membership in the EC. The cereal component, however, is expected to decline.

In 1968, use of cereals (corn, sorghums, wheat, barley, oats, and rye) totaled 5.8 million tons, or 57 percent of total compound feeds. By 1980, with EC membership, use may drop to 4 million tons, and the percentage in compound feeds, to 37. The biggest reduction is foreseen for

cereal's use in cattle feed. Declines would be moderate for compound hog feed and poultry feed.

All other ingredient categories would be used to substitute for this displaced cereal.

For various reasons, including lack of data on imports used solely by the compound feed industry, the ERS analysts did not make estimates of probable gains or losses in world trade in feedstuffs by 1980. Also difficult to estimate would be the exact effects on U.S. trade with the U.K. Many U.S. soybeans, for example, are first shipped to Canada and the Netherlands only to be transshipped to the U.K.

These generalizations can be made, however: If the U.K. had decided to continue with its policy of deficiency payments, the country in 1980 would be importing larger amounts of cereal grains.

Continuation of the variable levy system begun in mid-1971 would have resulted in a sizable increase in imports of grain substitutes. But the

gain would not have been enough to offset the loss in cereal trade. The effects of entry into the EC will be of a similar nature, but of a greater magnitude than those produced by a levy arrangement alone. (18)

Market Share Slips For LDC's Farm Exports

The less developed countries' (LDC's) share of the world's agricultural exports is declining.

Whereas the LDC's share of world agricultural imports remained fairly constant since 1955, their share of world agricultural exports dropped 12 percentage points—from 45 percent of the export total in 1955 to 33 percent in 1965-69.

The central plan, or Communist, countries are not included in the LDC group. Their percentage of both imports and exports has been virtually unchanged since the mid-fifties. Thus, most of the loss in the LDC's market share represented a gain for the developed countries,

COMPOUND FEEDS IN THE U.K.: PROJECTIONS TO 1980

Category and policy assumptions *	Cattle	Hog starter	Hog finisher	Layer	Broiler	Total
<i>Percent of ingredient in ration</i>						
Cereals						
DP	40.54	59.93	61.30	63.24	62.31	54.13
VIL	33.17	47.89	47.22	48.00	61.99	43.96
EC	15.00	46.43	44.74	48.00	61.99	37.38
Cereal by-products						
DP	20.00	19.03	20.00			11.95
VIL	20.00	23.00	23.35	8.85		15.32
EC	21.15	23.00	22.55	8.85		15.46
Oil cakes and seeds						
DP	26.65	2.84	5.92		23.54	14.06
VIL	26.13	6.63	11.00		22.42	14.45
EC	29.87	7.07	11.66		22.42	15.66
Molasses						
DP						
VIL	2.41			3.00		1.74
EC	9.77	.97	2.21	3.00		4.76
Animal and fish meals						
DP	6.57	10.00	3.95	10.90	9.83	8.10
VIL	6.41	10.00	4.68	10.37	9.79	8.00
EC	10.00	10.00	4.99	10.37	9.79	9.36
Other						
DP	6.24	8.19	8.84	25.86	4.32	11.76
VIL	11.87	12.47	13.74	29.79	5.80	16.52
EC	14.20	12.52	13.84	29.79	5.80	17.39
Total compound feed						
DP	37.10	9.24	13.87	26.66	13.13	100.00
VIL	37.27	9.26	13.90	28.10	11.47	100.00
EC	35.37	9.62	14.43	28.41	12.17	100.00

* DP —Continuation of deficiency payment price support system, deficiency payment included.
VIL —Enactment of a system of variable import levies (1971-73 transition period).
EC —Membership in the European Community with full acceptance of the Common Agricultural Policy (1973-78).

such as the U.S. and Western Europe. The developed countries accounted for 55 percent of the \$49-billion of agricultural exports in 1965-69—up from 45 percent in 1955.

Significant to the change in trade patterns for the LDC's is their shrinking portion of the agricultural imports of the developed nations, historically, the LDC's principal markets. In 1955, almost half (49 percent) of the developed countries' imports were from the LDC's, and 48 percent from other developed countries. By 1965-69, however, the LDC's supplied only 34 percent of these imports.

Trade within the developed area grew from 35 percent of world agricultural trade in 1955 to 42 percent in 1965-69. Much of this expansion reflects growth in consumer purchasing power and a quickened demand for a wider variety of food and feed products that are supplied by other developed nations.

The LDC's meantime turned increasingly to the developed countries for more of their food and raw agricultural materials. Agricultural imports from the economically advanced countries climbed 6 percent a year since 1955, due in part to food and offered by the developed countries. (22)

India Renews Interest In Soybean Production

Plant production scientists in India are taking a new look at the soybean as one possibility for easing that country's chronic problems of low farm income and huge deficits of high quality protein foods.

The soybean is unknown to most Indian farmers. Its production potential, however, has long been recognized by that country's researchers. They started work in soybeans in 1917, about the time soybean research got going in the U.S.

Over the years, India's search for a more perfect soybean resulted in improvements in yield and oil content, but researchers did not discover

a variety that met all the specifications: high yields, early maturity so as to fit into rotation patterns for wheat, and ability to survive on non-irrigated land. In 1953, soybean research was dropped.

Then in the mid-1960's, soybean prospects took a turn. Several new high-yielding varieties, developed in the U.S., were successfully tried in India. Encouraged by the results, the Government of India launched an All-India Coordinated Soybean Improvement Program, and other research projects involving technical assistance from the U.S.

Like their cereal counterparts that sparked Asia's Green Revolution, the newer soybeans are high yielding (up to 55 bushels per acre in Indian field tests) and early maturing. The crop can be harvested within 16 weeks after sowing—versus 23 weeks for local varieties—which allows plenty of time for Indian farmers to replant fields to wheat and other crops.

By growing soybeans and using recommended practices, farmers' return over cash expenses could be 50-75 percent greater than what they now get from the traditional crops of north central India, according to a study by the University of Illinois in cooperation with the Agency for International Development.

The study emphasizes, however, there are many prerequisites to realizing India's potential for soybean production. One is the need to build new facilities for processing soybean food products of high quality, thereby providing India's farmers with good market outlets.

The north central states of Uttar Pradesh and Madhya Pradesh each has the potential to produce enough soybeans to support a processing plant with a daily capacity of 200-500 tons.

Another prerequisite is the need for intensive promotional and educational programs, inasmuch as most producers are not now familiar with soybeans. Seed, technical assistance, and credit would also have to be

made available to growers.

The estimates for plant capacity and production assume that within 5 years of active promotion, farmers in Uttar Pradesh and Madhya Pradesh would raise soybeans on a fifth of the area now in maize, sorghum, and two other traditional crops; and on 10 percent of the area now under fallow. Assumed yield is around 25 bushels per acre. (21)

EC's Development Plan Would Aid Ex-farmers

Faced with the continued outmigration of farm workers in the next 5 years, the European Community is considering a \$500-million program to create new jobs for ex-farmers.

Some 600,000 farm workers, according to estimates by the EC Commission, will be leaving the land by 1977. Half of them are likely to remain in predominately agricultural regions.

To help backward farm regions and promote balanced development, the EC Commission is proposing financial assistance be given for individual projects that fit in with overall development plans in "priority agricultural regions." The sponsors of such projects would be paid \$1,500 from the European Farm Fund for each job created for a farmer, and held by him or one of his children.

Another Commission proposal would set up a European Interest Rebate Fund to reimburse interest on loans to finance certain types of investments in designated agricultural areas. The rebates, of up to 3 percent a year, would run for 12 years.

The cost to implement each of the two proposals is estimated at \$250 million over a 5-year period beginning in 1972.

The Commission member responsible for these proposals emphasized the urgency of a regional policy for rural development. He said the gap between rich and poor areas is growing. With the opening of frontiers, new factories would tend to be located in highly developed areas, thus increasing the imbalance. (23)

Global Agriculture Expects Greater Supplies in '72

Stiffer competition lies ahead for exports of U.S. farm products.

World agricultural production was up about 3 percent in 1971 from a year earlier, and both the importing and exporting countries will have greater supplies in the coming year.

World grain supply in '72 will be one of the biggest ever. Most of the principal grain areas had larger harvests in 1971. Production in the USSR declined slightly. World wheat output rose about 6 percent to 304 million tons, and production gains

were recorded in feed grains. Rice output was up slightly.

Grain prices in some markets have weakened because of larger exportable supplies and reduced import needs. Exporters are looking for ways to meet the competition. Thailand, for example, has lowered its tax on most grades of rice for exports, thus reducing the price of Thai rice in the world market.

Cotton presents a mixed picture. Supplies of cotton on the world market will stay tight in the year ahead, in response to a sustained high level of cotton use and only a slight gain in 1971 production. But the result of

smaller supplies and higher prices will be increased competition from manmade fibers.

World tobacco production in 1971 came close to the all-time record. Many countries have expanded output for both domestic use as well as for export to fill the shortage left by Rhodesia, whose tobacco trade has been embargoed by the United Nations.

In addition to bigger supplies in international markets, U.S. exporters may encounter increasing protectionism and trade restrictions, particularly in the European Economic Community. (20)

Addresses of State experiment stations:

This ready reference list for readers wishing to order publications and source material published through State experiment stations will be updated again in July 1972.

STATE	CITY	ZIP CODE	STATE	CITY	ZIP CODE
ALABAMA	Auburn	36830	MISSOURI	Columbia	65201
ALASKA	College, U. of Alaska	99701	MONTANA	Bozeman	59715
ARIZONA	Tucson	85721	NEBRASKA	Lincoln	68503
ARKANSAS	Fayetteville	72701	NEVADA	Reno	89507
CALIFORNIA	Berkeley	94720	NEW HAMPSHIRE	Durham	03824
	(101 Giannini Hall)		NEW JERSEY	New Brunswick	08903
	(145 Mulford Hall)		NEW MEXICO	Las Cruces	88001
	Davis	95616		(NM State University)	
	(217 Mrak Hall)			(P.O. Box 3-AG)	
	(1018 Haring Hall)		NEW YORK	Ithaca	14850
	Los Angeles	90024		(Cornell Station)	
	Parlier	93648		Geneva	14456
	Riverside	92502		(State Station)	
	(Citrus Research Center)		NORTH CAROLINA	Raleigh	27607
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Recent Publications

ECONOMICS OF AGRICULTURE: REPORTS AND PUBLICATIONS ISSUED OR SPONSORED BY USDA'S ECONOMIC RESEARCH SERVICE: JULY 1969-JUNE 1970. Eleanor B. Lanier, Office of Administrator. Supplement No. 2 to ERS 368.

This list of research publications is a source of reference for the published materials of ERS from July 1969 through June 1970. Articles in technical and professional journals—both within and outside USDA—are listed, as well as proceedings of symposia and conferences that report ERS research results.

LONG TERM PROJECTIONS OF SUPPLY, DEMAND, AND TRADE FOR SELECTED AGRICULTURAL PRODUCTS IN TAIWAN. Economic Research Service cooperating with the Research Institute of Agricultural Economics of National Taiwan University.

This study is an investigation of the long term prospects for the supply and demand for agricultural products in Taiwan through 1980.

GENERAL CROPLAND RETIREMENT: ANALYSIS OF FOUR ALTERNATIVES. Glenn A. Zepp and Jerry A. Sharples, Farm Production Economics Division. ERS 462.

This study attempts to evaluate several general cropland retirement proposals. It is a sequel to a 1968 study of general cropland retirement. Only the short-run regional and national implications of the proposal are examined.

THE ECONOMIC AND SOCIAL CONDITION OF RURAL AMERICA IN THE 1970'S. Economic Development Division; for Committee on Government Operations, United States Senate, 92nd Congress, 1st Session. Part 1.

This document is designed to describe the economic and social conditions and trends of rural America. The study compares rural areas with metropolitan centers in such categories as population, income and employment, health and education;

The publications listed here are issued by the Economic Research Service and cooperatively by the State universities and colleges. Unless otherwise noted, reports listed here and under Sources are published by ERS. Single copies are available free from The Farm Index, OMS, U.S. Department of Agriculture, Washington, D.C. 20250. State publications (descriptions below include name of experiment station or university after title) may be obtained only by writing to the issuing agencies of the respective States.

housing, and government services and facilities.

THE LOOK OF OUR LAND. AN AIRPHOTO ATLAS OF THE RURAL UNITED STATES: THE MOUNTAINS AND DESERTS. Simon Baker, and Henry W. Dill, Jr., Natural Resource Economics Division. Agricultural Handbook 406.

Airphotos illustrate land use patterns and terrain in five land resource regions in the Eastern and Southern United States. Portions of small-scale airphoto index sheets and a stereopair of airphotos accompany the description of each area that is reproduced from USDA Agriculture Handbook 296, *Land Resource Regions and Land Resource Areas of the United States*.

VARIATIONS IN LENGTH OF THE FARM WORKWEEK. Walter E. Sellers Jr., Farm Production Economics Division. Stat. Bull. 474.

The length of workweek for a farmer and his help differs by type and size of farm and the production region in which the farm is located. In most farm production areas and on most types of farms, the operator—whether he hires labor or not—puts in many more hours per week than his wife or other family members. On the smaller farms, however, his proportion of the family labor is less than on the larger farms.

SUPPLYING U.S. MARKETS WITH FRESH WINTER PRODUCE: CAPABILITIES OF U.S. AND MEXICAN PRODUCTION AREAS. Joseph C. Podany and Levi A. Powell, Sr., Marketing Economics Division; C. John Fliginger, Foreign Development and Trade Division; and Earle E. Gavett, Farm Production Economics Division. AER 154.

As a major supply area, Mexico is an important source of vegetables for U.S. consumers but of concern to domestic suppliers. Imports of fresh winter vegetables from Mexico to the U.S. increased from 329 million pounds in 1960 to slightly over a billion pounds in 1970. Tomatoes are the most important of the fresh vegetables and prospects are that Mexico could supply larger amounts of vine-ripe tomatoes while Florida's share of the market may decline.

PRODUCTION COSTS, RESOURCE RETURNS AND OTHER ECONOMIC CHARACTERISTICS: COMMERCIAL COTTON FARMS, SOUTHERN HIGH PLAINS, TEXAS, 1966-69. J. Albert Evans and W. F. Hughes, Farm Production Economics Division. ERS 478.

Estimated net income on typical cotton farms in the Southern High Plains of Texas during 1966-69 ranged from a high of \$25,390 to a low of \$6,430. Whether the farmer irrigated his fields, was a part or full owner, or farmed in a tenant status, contributed somewhat to the variations in net income for many of the crops.

HIGH-YIELDING VARIETIES OF WHEAT IN DEVELOPING COUNTRIES. Sheldon K. Tsu, Foreign Regional Analysis Division. ERS-For. 322.

The production of high-yielding varieties of wheat in developing countries in recent years has been phenomenal. Total semidwarf wheat area in India, Pakistan, Mexico, Turkey, Afghanistan, Tunisia, Iran and Morocco, expanded from 0.6 million hectares in 1966 to 10.6 million hectares in 1970. Production during the

same period increased from 1.6 million tons to 22.7 million tons. In 1970, semidwarf wheat in these countries accounted for 25 percent of the total wheat area and 49 percent of the total wheat output.

COMMERCIAL WHEAT PRODUCTION: WORLD MARKETS, U.S. PRODUCTION CENTERS, COSTS AND RETURNS ANALYSIS. P. Weisgerber, Farm Production Economics Division. ERS 480.

A costs and returns study of three representative U.S. wheat operations (in the Pacific Northwest, Northern Plains, and Central-Southern Plains) shows that ownership returns exceeded investment costs in all cases, despite farm program acreage restrictions necessitated by changes in world wheat production. Program obligations connected with the international wheat situation were as im-

portant in determining income as were weather conditions.

THE HIRED FARM WORKING FORCE OF 1970: A STATISTICAL REPORT. Robert C. McElroy, Economic Development Division. AER 201.

This report presents information on the size and composition of the 1970 hired farm working force and on employment and cash earnings from farm and nonfarm wage work during the year. The data were obtained from the annual survey conducted for ERS by the Bureau of the Census as a supplement to the regular Current Population Survey made in December 1970.

COST AND RETURNS: SOUTHWEST CATTLE RANCHES. James R. Gray, Wylie D. Goodsell, and Macie J. Belfield, Farm Production Economics Division. FCR 81.

This report is part of a continuing nationwide study of costs and returns on commercial farms and ranches in selected farming regions. The typical ranch in the report area averaged about 300 head. In 1970 the average ranch income was 7 percent less than the 1969 peak, mainly because of lower calving rates and fewer feeder calves sold.

FLOWERS AND FOLIAGE PLANTS PRODUCTION AND SALES, 1969 AND 1970: INTENTIONS FOR 1971 IN SELECTED STATES. Statistical Reporting Service. SpCr. 6-1 (71).

The estimates in this report relate to sales by commercial producers growing four cut flowers—carnations, chrysanthemums, gladioli, or roses—plus potted chrysanthemums and foliage. The study includes revised estimates for 1969 and preliminary estimates for 1970.

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2. Robert R. Boersma, Consumer & Marketing Service (special material); also *Hop Production*, Agricultural Information Bull. No. 240.
3. *Hop Production*, Agricultural Information Bull. No. 240.
4. Mississippi Agricultural Experiment Station, Mississippi State University, State College, Mississippi, in cooperation with ERS. *Levels and Locations of Fluid Milk Production, Processing, and Consumption in the South, 1965 and 1975*, Southern Cooperative Bull. No. 164, January 1971.
5. Paul E. Strickler, FPED; and *Yearbook of Agriculture 1970*.
6. Anthony G. Mathis ESAD, and Donald E. Friendly, Consumer and Marketing Service. "Change in State Milk Controls," *Dairy Situation*, DS-338, November 1971.
7. Rex F. Daly, ESAD. "Agricultural Industry Includes Much More Than Farming" (speech at Northeast Agribusiness Outlook Conference, Burlington, Vt., September 1971).
8. David Brewster, Agricultural History Branch, ESAD.
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10. Jack Hayes, OI (special material).
11. Walter E. Sellers, FPED. *Variations in Length of The Farm Workweek*, Stat. Bull. 474.
12. Michael G. Van Dress, MED. *The Food Service Industry: Type, Quantity and Value of Foods Used*, Stat. Bull. 476.
13. Richard Hall, MED. "Shipping Point Markets for Flowers" (speech presented to American Horticultural Science Association, Manhattan, Kansas, August 1971).
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15. Robert W. Bohall and Richard A. King, MED; M. G. Mann, North Carolina State University. *Measuring Pricing Performance in the Winter Carrot Market* (manuscript).
16. Norman L. Rollag, MED. *A Proposed Market Development Program for the Mohair Industry*.
17. Robert H. Miller, ESAD. "Tobacco Use in Cigarettes—Trends and Potentials," *Tobacco Situation*, TS 137, September 1971.
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23. European Community Information Service.

NOTE: Unless otherwise indicated, authors are on the staff of the Economic Research Service (ERS) with their divisions designated as follows: Economic and Statistical Analysis Division (ESAD); Economic Development Division (EDD); Farm Production Economics Division (FPED); Foreign Development and Trade Division (FDTD); Foreign Regional Analysis Division (FRAD); Marketing Economics Division (MED); and Natural Resource Economics Division (NRED).

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Economic Trends

Item	Unit or Base Period	1967	1970 Year	Sept.	July	1971 Aug.	Sept.
Prices:							
Prices received by farmers	1967=100	—	110	110	113	113	111
Crops	1967=100	—	100	104	111	108	104
Livestock and products	1967=100	—	118	116	114	117	117
Prices paid, interest, taxes and wage rates	1967=100	—	114	115	120	120	121
Family living items	1967=100	—	114	115	119	120	120
Production items	1967=100	—	110	111	116	116	116
Ratio ¹	1967=100	—	96	96	94	94	92
Wholesale prices, all commodities	1967=100	—	110.4	111.0	114.6	114.9	114.5
Industrial commodities	1967=100	—	110.0	110.4	114.5	115.1	115.0
Farm products	1967=100	—	111.0	112.1	113.4	113.2	110.5
Processed foods and feeds	1967=100	—	112.0	113.0	116.0	115.4	114.6
Consumer price index, all items	1967=100	—	116.3	117.5	121.8	122.2	122.4
Food	1967=100	—	114.9	115.7	119.8	120.0	119.1
Farm Food Market Basket: ²							
Retail cost	Dollars	1,080	1,225	1,229	1,263	1,264	1,252
Farm value	Dollars	414	480	473	484	485	471
Farm-retail spread	Dollars	666	745	756	779	779	781
Farmers' share of retail cost	Percent	38	39	38	38	38	38
Farm Income: ³							
Volume of farm marketings	1967	100	104	113	101	106	118
Cash receipts from farm marketings	Million dollars	42,693	49,231	4,539	3,986	4,234	4,800
Crops	Million dollars	18,434	19,636	1,980	1,609	1,713	2,100
Livestock and products	Million dollars	24,259	29,595	2,559	2,377	2,521	2,700
Realized gross income ⁴	Billion dollars	49.0	56.6	55.7	—	—	59.3
Farm production expenses ⁴	Billion dollars	34.8	40.9	41.2	—	—	43.0
Realized net income ⁴	Billion dollars	14.2	15.7	14.5	—	—	16.3
Agricultural Trade:							
Agricultural exports	Million dollars	—	7,174	567	579	546	750
Agricultural imports	Million dollars	—	5,667	469	489	555	651
Land Values:							
Average value per acre	1967 = 100	—	⁶ 118	⁷ 117	—	—	⁸ 121
Total value of farm real estate	Billion dollars	—	⁶ 210.7	⁷ 208.9	—	—	⁸ 214.0
Gross National Product: ⁴							
Consumption	Billion dollars	793.9	974.1	983.5	—	—	1,059.0
Investment	Billion dollars	492.1	615.8	620.9	—	—	672.1
Government expenditures	Billion dollars	116.6	135.3	138.6	—	—	152.9
Net exports	Billion dollars	180.1	219.4	220.1	—	—	234.4
Income and Spending: ⁵							
Personal income, annual rate	Billion dollars	5.2	3.6	4.0	—	—	-0.5
Total retail sales, monthly rate	Million dollars	629.3	803.6	814.9	859.2	867.6	870.8
Retail sales of food group, monthly rate	Million dollars	26,151	30,381	31,951	33,688	34,578	—
Employment and Wages: ⁵							
Total civilian employment	Millions	74.4	78.6	78.5	78.9	79.2	79.5
Agricultural	Millions	3.8	3.5	3.4	3.4	3.4	3.4
Rate of unemployment	Percent	3.8	4.9	5.4	5.8	6.1	6.0
Workweek in manufacturing	Hours	40.6	39.8	39.6	39.8	39.8	39.9
Hourly earnings in manufacturing, unadjusted	Dollars	2.83	3.36	3.42	3.57	3.56	3.60
Industrial Production: ⁵							
1967 = 100		—	107	106	106	105	105
Manufacturers' Shipments and Inventories: ⁵							
Total shipments, monthly rate	Million dollars	46,458	54,429	55,073	58,185	57,393	—
Total inventories, book value end of month	Million dollars	84,563	100,476	99,576	100,194	100,177	—
Total new orders, monthly rate	Million dollars	46,707	53,866	53,567	58,022	57,726	—

¹ Ratio of index of prices received by farmers to index of prices paid, interest, taxes, and farm wage rates. ² Average annual quantities of farm food products purchased by urban wage-earner and clerical worker households (including those of single workers living alone) in 1959-61—estimated monthly. ³ Annual and quarterly data are on 50-State basis. ⁴ Annual rates seasonally adjusted third quarter. ⁵ Seasonally adjusted. ⁶ As of November 1, 1970. ⁷ As of March 1, 1970. ⁸ As of March 1, 1971.

Sources: U.S. Dept. of Agriculture (Farm Income Situation, Marketing and Transportation Situation, Agricultural Prices, Foreign Agricultural Trade and Farm Real Estate Market Developments); U.S. Dept. of Commerce (Current Industrial Reports, Business News Reports, Monthly Retail Trade Report and Survey of Current Business); and U.S. Dept. of Labor (The Labor Force and Wholesale Price Index).

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